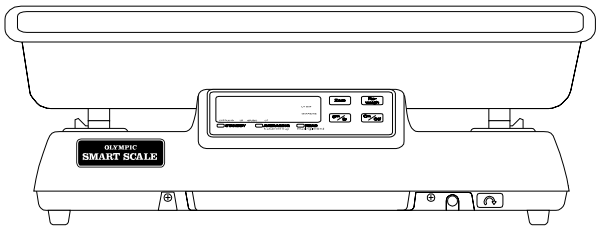
Instruction Manual

OLYMPIC
SMART SCALE®

MODEL 20/25

CAUTION: Read this instruction manual completely before using or servicing this product.



OLYMPIC MEDICAL
5900 1st Ave S · Seattle, WA 98108 · USA
www.olymed.com

For information or assistance
Call Toll-Free 1-800-426-0353
U.S. or Canada

SS-5632A-EN(M12)

OLYMPIC
SMART SCALE®
Model 20/25

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Section 1: Installation

CAUTION: Read and be familiar with this instructional manual before using or servicing this product.

CAUTION: This product should only be assembled or installed by a qualified technician.

WARNING: Electrical shock hazard when enclosure is opened. Disconnect power cord from electrical outlet before assembling, cleaning, or servicing.

Intended Use

For weighing babies up to 33 pounds (14.8 kg).

Description & Use

CAUTION: Never lean against or touch the weighing tray or baby while weighing is in progress.

Smart Scale Models 20 and 25 are operated and serviced in the same manner, with the exception of the Model 25's attached roll-around cart.

The **Model 20** Olympic Smart Scale is an electronic baby scale. Place the scale on a flat, level table or counter surface. Make sure that the scale cannot slide or "walk" off the edge. Weight of scale with tray is approximately 26 lbs (11.7 kg).

The **Model 25** Olympic Smart Scale is an electronic baby scale attached to a roll-around mobile base.

Calibration Check

Every Smart Scale is calibrated at the Olympic Medical factory before shipment. However, the calibration of the scale should be checked before it is put into service. (See *Calibration* instructions on page 3-1.)

Carrying the Model 20 Scale

To pick up a scale, grasp case firmly at each end (*Fig. 1A*). Never attempt to lift scale by tray.

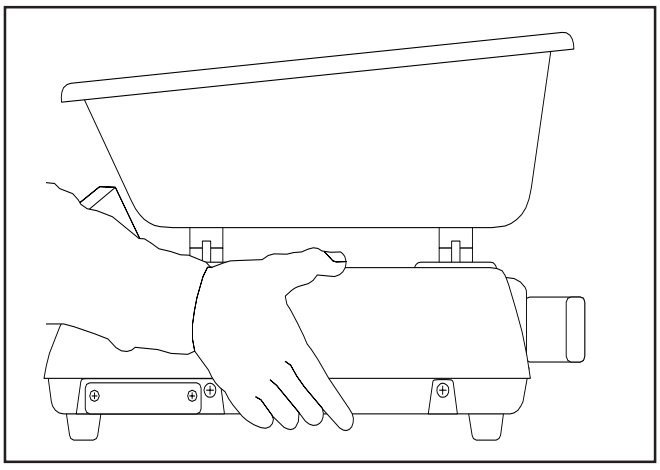


Fig. 1A

Installation

Instructions for Cart Mounting

CAUTION: When using the scale on a cart, ensure that it is securely anchored.

Four threaded (10-32 UNF) holes are provided in base plate of scale for bolting it to a cart or table (*Fig. 1B*). Rubber feet do not have to be removed.

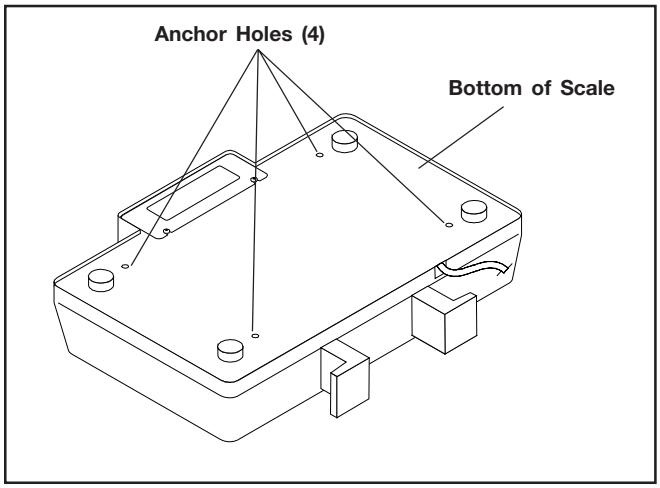


Fig. 1B

Attaching & Removing the Tray

CAUTION: Ensure that all four tray legs are secured before placing infant in tray.

CAUTION: If using a Model 25 with roll-around cart, always lock casters before placing baby in tray.

There are several versions of the Smart Scale tray. Trays can be used interchangeably, but the scale must be calibrated and the zero offset adjusted whenever a new tray is added.

Any time a tray is changed, the scale must be calibrated and the zero offset adjusted with the new tray in place (see *Calibration* on page 3-1 and *Adjusting the Zero Offset* on page 3-13).

To remove the tray:

1. Loosen four Phillips screws holding tray legs (*Fig. 1C*).

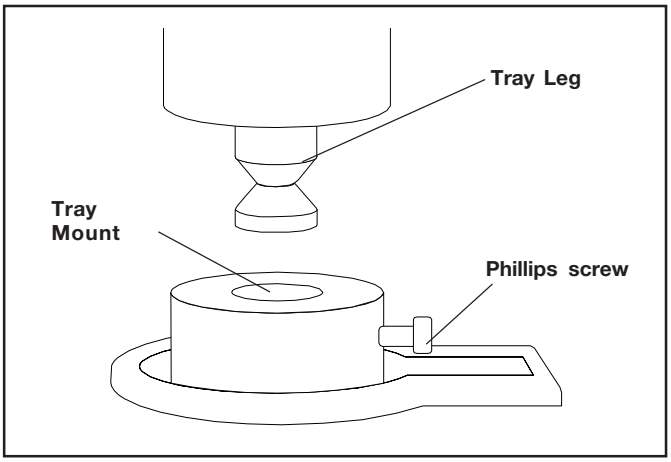


Fig. 1C

2. Lift tray straight up (*Fig. 1D*).

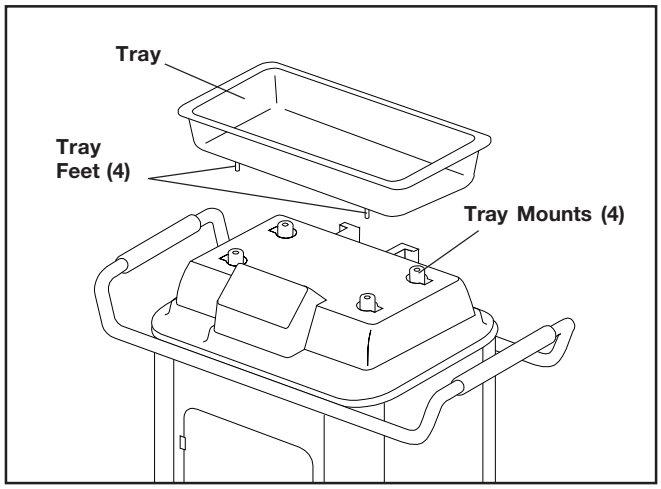


Fig. 1D

To attach the tray:

1. Lower tray so four feet fit into tray mounts.
2. Securely tighten all four Phillips screws (*Fig. 1C*).

Initial Battery Charge

The Smart Scale has an internal rechargeable battery pack that automatically charges when it is connected to a wall outlet. Before the scale is battery operated for the first time, the batteries should be charged for approximately 2.5 hours.

Electrical Requirements

CAUTION: This product must be connected directly to a hospital-grade electrical outlet.

These products are rated at 120 Vac, 60 Hz, 2 amps. A 9-ft. (2.8 m) long power cord is included.

Products may be ordered that are rated at 220/240 Vac, 50/60 Hz, 0.1 amps. They will be shipped without a plug. Install the proper connector according to the following wire description:

220/240 Vac products are not UL or CSA certified.

Black: AC high

White: AC low (neutral)

Green: Chassis ground

Battery Operation

The scale can also be powered by its internal rechargeable battery pack consisting of six sub-c NiCad batteries rated at 7.2 Vac (1.2 Vac per cell).

For information on replacing the battery pack, see *Replacing the Battery Pack* on page 3-11.

International Safety Symbols

The following international safety symbols are used on the scale:

Type B Equipment

Protective Earth (Ground)

See instructions

Section 2: Operation

CAUTION: Read and be familiar with this instructional manual before using or servicing this product.

CAUTION: Inspect this product before each use to ensure proper functioning.

CAUTION: Never use the scale or tray to transport an infant.

DANGER: Explosion hazard. Do not use this product in the presence of flammable anesthetics.

CAUTION: This product must be connected directly to a hospital-grade electrical outlet.

Summary Instructions

To weigh a baby, follow these steps:

1. Ensure that the Smart Scale Model 20 is on a stable surface. If using a Model 25 (cart-mounted) Smart Scale, set the caster brakes.
2. To turn the scale display on, press **On/Off (display)**. Wait for the "Standby" light to dim and for the "0" to appear on the weight display before weighing the baby.
3. Press **Gm/lbs** to select the appropriate unit of measure.
4. If the baby is not moving, the baby's weight will appear immediately, and the green "Read" light illuminates.
5. The yellow "Averaging" light illuminates if the baby is moving. After the baby's weight is computed, the "Averaging" light dims, the weight is locked, and the green "Read" light illuminates.
6. To "tare out" or cancel the weight of blankets or other objects, place the blanket on the tray and press **Zero**.
7. Press **Reweigh** to weigh the baby again (after initial weighing is completed and green "Read" light illuminates).

Use the "Averaging" feature to obtain the most accurate weight of an active baby.

Operation

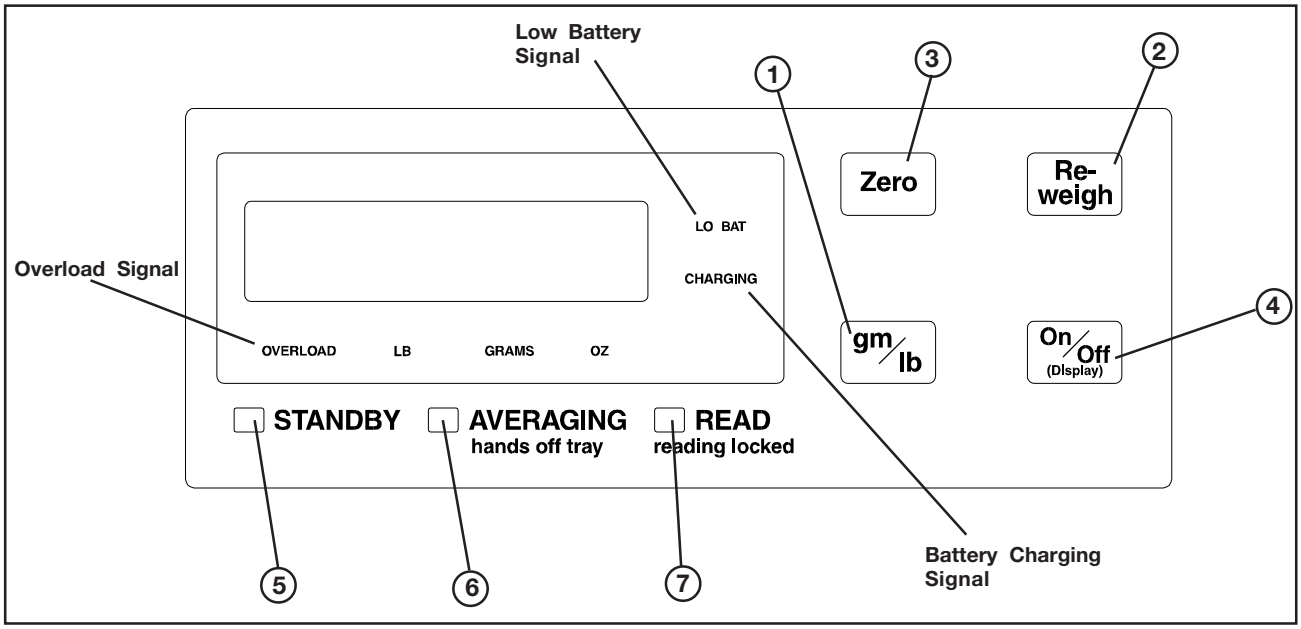


Fig. 2A

Controls

Controls are shown in *Fig. 2A*.

① **Gm/lbs:** Press to convert grams to pounds-ounces and vice versa. (Ounces to 0.1 ounce.)

② **Reweigh:** Press to weigh the baby again (after initial weighing is completed and green “Read” light illuminates).

③ **Zero:** Press to clear display and get ready to weigh the next baby.

④ **On/Off:** Turn scale display on/off. (If operating on batteries, scale turns itself off automatically three minutes after last weighing.)

Status Lights

Status lights are shown in *Fig. 2A*.

⑤ **Standby (yellow):** When flashing, scale is warming up and automatically zeroing. Don't touch tray. Wait until “Standby” light dims and “0” appears on display before placing baby on tray.

⑥ **Averaging (yellow):** When flashing, scale has detected baby movement and has begun automatically computing baby's weight. Don't touch tray or baby while averaging light illuminates as an error in weight will result.

⑦ **Read (green):** Okay to read. Final weight has been computed and is locked on the display.

On/Off

Press **On/Off** (see *Fig. 2A*) to turn the Smart Scale display on or off. When the Smart Scale display is on, the "Standby" light blinks for a few seconds while the scale warms up and automatically zeros.

Wait for the "Standby" light to dim and "0" to appear on the weight display before placing the baby on the scale.

NOTE: The "Standby" light will not dim if tray is moving. Make sure tray is not moving.

NOTE: Blankets or other items placed on the scale before the "0" appears will not be weighed — they will be tared out (see "Tare Function" on page 2-6).

Averaging Tone Volume Control Knob

Turning the Averaging Tone Volume Control Knob fully to the left will silence the tone (*Fig. 2B* and *2C)*. Rotating the knob to the right will increase the volume of the tone.

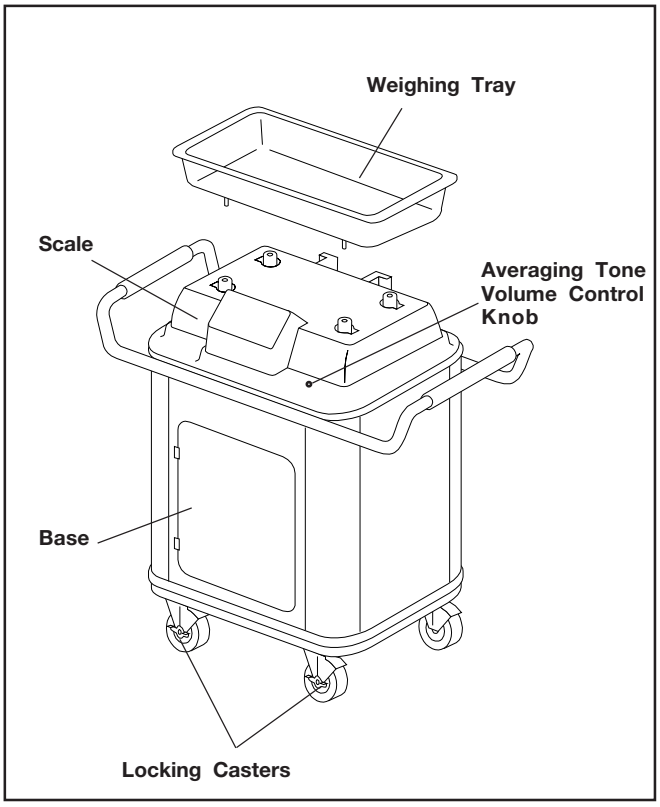


Fig. 2B

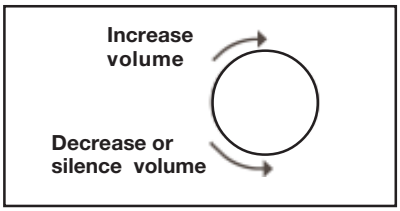


Fig. 2C

Setting Caster Brakes (Model 25)

The front two casters have foot brakes. Step on one side of the brake lever to set the brake. Step on the other side to release (*Fig. 2D)*.

CAUTION: Always lock casters before placing baby in the tray.

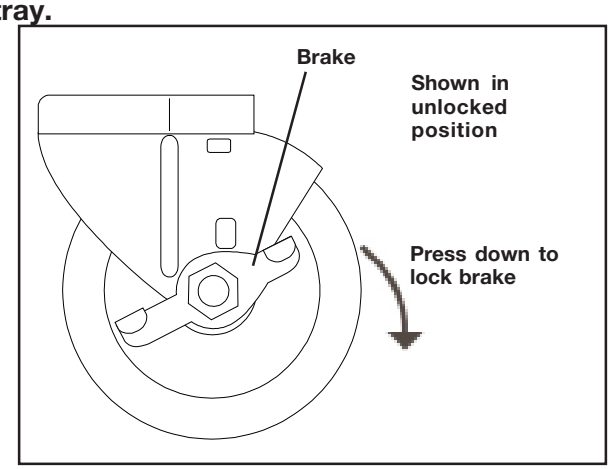


Fig. 2D

Weighing the Baby

CAUTION: Never lean against or touch the weighing tray or baby while weighing is in progress.

CAUTION: Never leave an infant unattended in the tray.

CAUTION: If using Smart Scale Model 25, always lock casters before placing baby in tray.

After "0" appears on the display, place baby in center of tray.

Baby Not Moving

If Smart Scale detects that the baby is not moving, his weight will immediately appear and be locked on the display. The green "Read" light will also illuminate.

Baby Moving

If the baby is moving, the Smart Scale will automatically compute the weight within a few seconds. During this time, the yellow “Averaging” light will blink and the beeper will sound.

> **NOTE:** You can adjust the sound using the On/Off Volume Control knob, which is located below the control panel to the right (see page 2-3).

After the baby's weight is computed, the “Averaging” light will stop blinking, the green “Read” light will illuminate, and the final weight will be locked on the display.

> **CAUTION: Touching the tray or baby while the “Averaging” light is on can result in an incorrect weight. If you do touch the baby, wait until the “Averaging” light dims and the “Read” light illuminates. Then press “Reweigh” to weigh the baby again. (See “Reweigh Feature” on page 2-6).**

Weight Lock

Weight will remain locked on display until **Zero** is pressed or the scale display is turned off. (When operating on battery power, display automatically turns itself off after three minutes.)

To Weigh Next Baby

Press **Zero** and wait for “0” to appear on display before placing the next baby on the tray.

> **NOTE:** The Smart Scale has an automatic zeroing feature. Each time you press **Zero**, the scale automatically returns to the same electronic zero reference point. This assures reproducible weight change measurements.

Grams/Pounds-Ounces

Grams can be converted to pounds-ounces and vice versa by pressing **gm/lb**. The scale displays ounces to the nearest tenth of an ounce.

Tare Function

There are two ways to cancel (tare out) the weight of blankets or other objects:

- If the scale display is on ("0" shown on the display), place blanket on tray and press **Zero**. The blanket weight will be cancelled and the display will show weight of baby without the blanket.
- If the scale display is off, place the blanket on the tray and press **On/Off**. The weight of the blanket will automatically be cancelled and the display will show "0". Next, place the baby on tray and weigh.

If an object is on the tray and the display shows "0", the weight of the object has been cancelled (tared out). If an additional object or a baby is then placed on the tray, only its weight will be shown.

NOTE: If the blanket is removed from the tray after its weight has been cancelled (tared out), the scale will automatically zero itself again. The "Standby" light may flash for a few seconds and the "0" will reappear on the display. This means that the scale no longer takes the blanket weight into account and is ready to weigh another baby.

Overload

If the load exceeds 15 kg (33 lbs. 1 oz.), the overload signal on the display panel will illuminate. Reduce the weight on the scale.

Reweigh Feature

After the baby has been weighed (green "Read" light illuminates), you can press **Reweigh** to weigh the baby again, as many times as desired.

Reweighing does not cancel the tare function. If the blanket weight was cancelled (tared out) for the first weighing, it will remain cancelled at reweigh.

NOTE: The reweigh feature is particularly useful when IV tubes must be elevated while weighing the baby. The weight can be confirmed by pressing **Reweigh**.

Cleaning

CAUTION: Do not allow liquid to enter the case as this may damage the electronics and provide an electric shock hazard.

CAUTION: To avoid damage to tray, do not wipe with alcohol.

Regularly wipe the Smart Scale clean using a cloth dampened with any ordinary hospital disinfectant.

Battery Operation

CAUTION: Rechargeable batteries that are repeatedly partially discharged and recharged may, over time, develop a "memory" that will eventually lead to premature battery failure. To avoid this, occasionally run the scale on battery power alone until the cells are fully discharged, and then charge them fully for 2.5 hours.

Charging the Battery

The Smart Scale has a rechargeable battery pack that automatically charges whenever the scale is connected to a wall outlet. When charging, "Charging" illuminates on display.

The scale can be used while connected to an electrical outlet with the battery pack removed, or while the batteries are charging.

Battery Charge Life

With batteries fully charged, scale will operate for approximately three hours of continuous use — enough for about 150 weighings. When power cord is not in use, wrap it around the cleats on the rear of the scale.

Low Battery

If "Low Battery" illuminates, approximately 30 minutes of continuous operation remain. Connect scale to wall outlet as soon as convenient.

If "Low Battery" blinks, the battery charge has been depleted. The scale will automatically turn off and should be connected to a wall outlet for recharging.

Battery Pack Replacement

See *Replacing Battery Pack* on page 3-11.

Section 3: Service

CAUTION: Service should only be performed by a qualified technician.

CAUTION: This product should be calibrated, at minimum, every 12 months.

WARNING: Electrical shock hazard when enclosure is removed. Disconnect power cord from electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

Important Information

The Olympic Smart Scale is designed to allow field servicing down to the printed circuit board (PCB) level. These instructions will assist you in isolating the problem PCB or component. The faulty PCB must then be returned to Olympic Medical for repair or replacement. If the loadcell is found to be damaged, return the scale to Olympic Medical for repair.

To identify the problem, see *Troubleshooting* on page 3-17.

ESD & Contamination

The integrated circuits and semiconductors on the PCBs can be damaged by electrostatic discharge or contamination by body oil. Observe proper handling cautions at all times.

Calibration

The scale can be accurately calibrated with any size tray in place, and the various size trays can be used interchangeably. However, any time a tray size is changed, the scale must be calibrated and the zero offset adjusted (see *Adjusting the Zero Offset* on page 3-13) with the new tray in place.

There are several versions of the Smart Scale tray. Trays can be used interchangeably, but the scale must be calibrated and the zero offset adjusted whenever a new tray is added.

Rationale: As with any precision electronic instrument, the Smart Scale can drift out of calibration over time. Since no electronic scale recalibrates itself automatically, the only way to assure correct calibration is to place an accurate, known weight on the scale tray.

Calibration Weight: The Smart Scale calibration procedure requires a weight of 7500 ±1 g. This calibration weight may be ordered from Olympic Medical (Catalog No. 56315).

For information or assistance
Call Toll-Free
1-800-426-0353
U.S. or Canada

Calibrate Before First Use: The Smart Scale was calibrated at our factory in Seattle before it was shipped. However, it should be calibrated before being put into service because local variations in the force of gravity can affect calibration by as much as 20 gm.

Calibration Frequency: Smart Scale calibration should be checked , at minimum, every 12 months as well as each time after a tray is changed. Calibration should not drift by more than 1–2 g. If the weight has drifted by significantly more than two grams, see *Troubleshooting* on page 3-17.

Calibration Procedure

1. Ensure scale cart is on a firm, level surface and protected from moving air. Ambient temperature should be 70º–75ºF (21.1º–23.8ºC).
2. Press and hold **Zero** and then press **On/Off**. The current software revision (e.g., "CAL 1.0") will first appear on the display (*Fig. 3A*), then "C 0" will appear (*Fig. 3B)* while the scale captures the zero point. Finally, "C 7500" will appear (*Fig. 3C*).
3. When "C 7500" appears, place the 7500-gram test weight on the center of the tray. Calibration is successfully completed when "7500" locks on the display and the "Grams" signal and green "Read" light illuminate (*Fig. 3D)*.

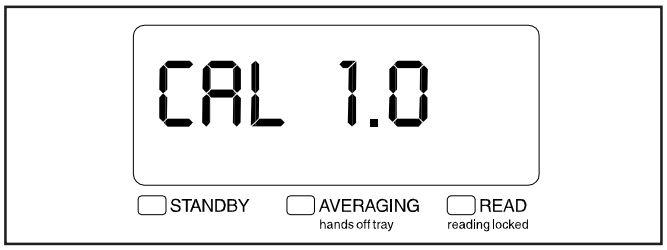


Fig. 3A

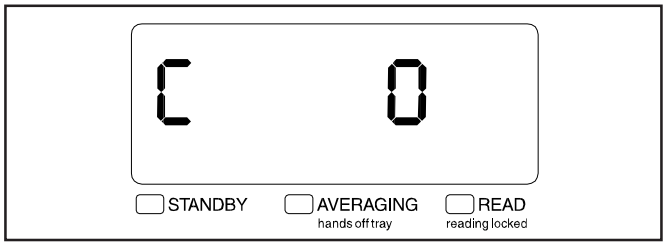


Fig. 3B

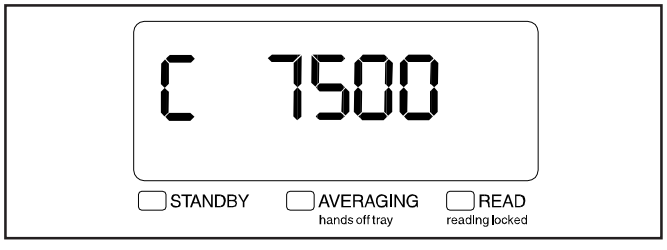


Fig. 3C

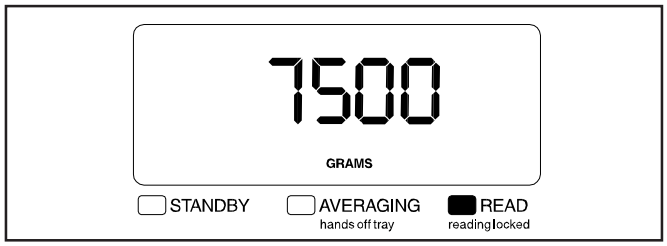


Fig. 3D

4. Perform the off-center load test.

Off-Center Load Test

Do the following to check the accuracy of the load cell after calibration:

1. Place the 7500-gram test weight in the center of the tray and press **Reweigh**. Record the displayed weight.
2. Place the test weight at one of the four test points shown in *Fig. 3D*. Press **Reweigh** and record the displayed weight.

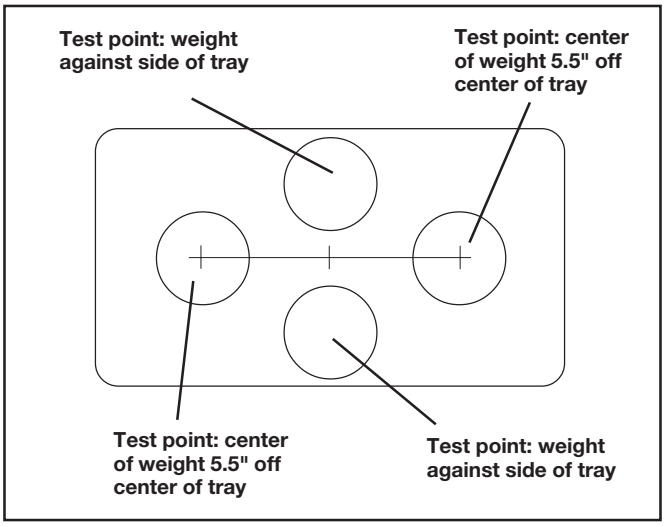

Test point: weight against side of tray
Test point: center of weight 5.5" off center of tray
Test point: center of weight 5.5" off center of tray
Test point: weight against side of tray

Fig. 3D

3. Repeat step 2 for the other test points shown in *Fig. 3D*.
4. If any of the displayed weights from the test points differ ±6 g from the displayed weight from the center of the tray, the loadcell may be damaged and require replacement. Contact the Olympic Medical Service Department.

For information or assistance
Call 800-426-0353
USA or Canada

How Olympic Smart Scale Averages the Weight of an Active Baby

The Olympic Smart Scale uses a sensitive loadcell together with a proprietary software algorithm to detect the most accurate weight and motion of an infant. When weight-force is applied to the tray, electronic signals from the loadcell are processed by a series of electronic filters and a microprocessor to detect motion and determine averaged weight.

Weight samples are taken 16 times a second. Sets of six samples are averaged together to produce one reading. Each reading is compared to previous readings. If a reading is within ±1 g, it is averaged with the previous readings. If four consecutive readings are within ±1 g, the Smart Scale will automatically lock the baby's weight, determined by the average of these four readings, on the display.

If after taking 18 readings the Smart Scale is not able to find four consecutive readings within ±1 g, it will recognize that the baby is moving. The Smart Scale will then switch on additional filtering, clear all averages, and repeat the process. If after an additional 18 readings it still has not found four compatible readings, the Smart Scale will display and lock on the last average.

To assure accuracy, design parameters for calculating averaged weight were determined by weighing active babies on a special platform using a strip chart recorder to measure the dynamic forces generated by the baby's weights and movements. The software program for weight-averaging was then verified by further extensive testing in nurseries.

With its proprietary weight-averaging techniques, Olympic Smart Scale can, typically, weigh a moving baby to an accuracy of one or two grams.

Troubleshooting

CAUTION: Service should only be performed by a qualified technician.

WARNING: Electrical shock hazard when enclosure is removed. Disconnect power cord from electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

NOTE: After making any repairs to the Smart Scale, always calibrate the scale. Ensure that you have the appropriate 7500-gram weight before disassembling the scale. Other repairs involve the use of specific additional weights. Review the repair information before disassembling the scale.

For information or assistance
Call Toll-Free
1-800-426-0353
U.S. or Canada

See *Troubleshooting* on page 3-17 to determine the most likely cause of a problem.

- If an internal component needs to be tested, remove the scale enclosure according to *Disassembly* on page 3-5 and then follow the instructions in *Problems & Solutions* on page 3-9.
- If the loadcell is damaged, return the scale to Olympic Medical for service.

After identifying a problem PCB, see *Removing Internal Components* on page 3-12.

NOTE: Do not remove PCBs for troubleshooting.

Disassembly

WARNING: Electrical shock hazard when enclosure is removed. Disconnect power cord from electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

1. Turn the scale off and disconnect power cord from electrical outlet.
2. Remove tray by unscrewing four Phillips screws holding tray legs (*Fig. 3F*).

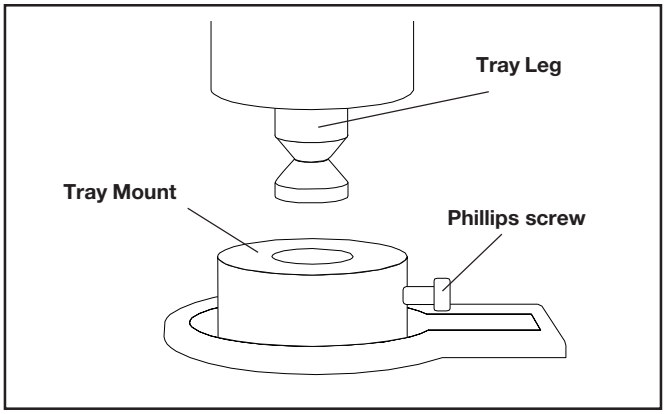


Fig. 3F

3. For Model 25 scales, open door on base and remove the four screws securing the scale to the base (*Fig. 3G*). Lift back of scale and slide scale backwards until the Volume Control Knob clears the front of the skirt. Lift scale up and out of base.

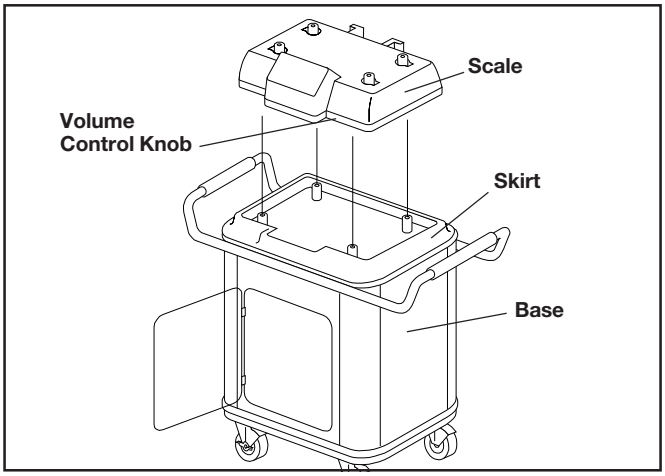


Fig. 3G

NOTE: If Model 25 scale needs to be returned to Olympic Medical for servicing, only the scale portion needs to be removed and returned.

4. Carefully slide the front edge of scale over edge of a bench. Remove the front screw and then loosen the two screws on the front bottom hatch (*Fig. 3H*).

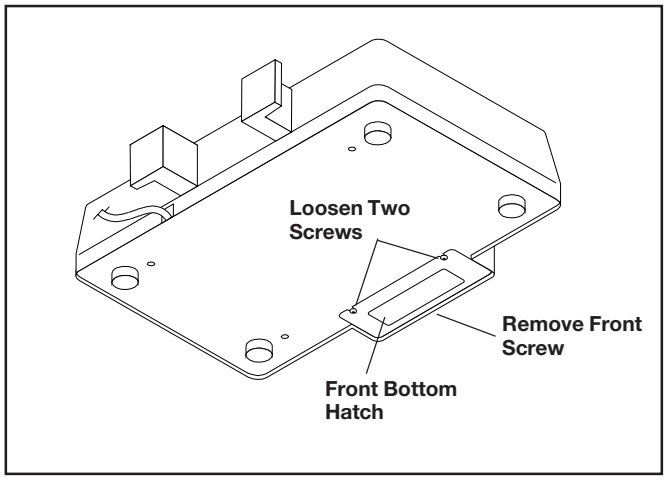


Fig. 3H

5. Slide hatch back and lift out its front edge. Slip the flat ribbon cable out of retaining clip and remove hatch.

6. Remove the eight screws around the lower edge of the case (*Fig. 3I*).

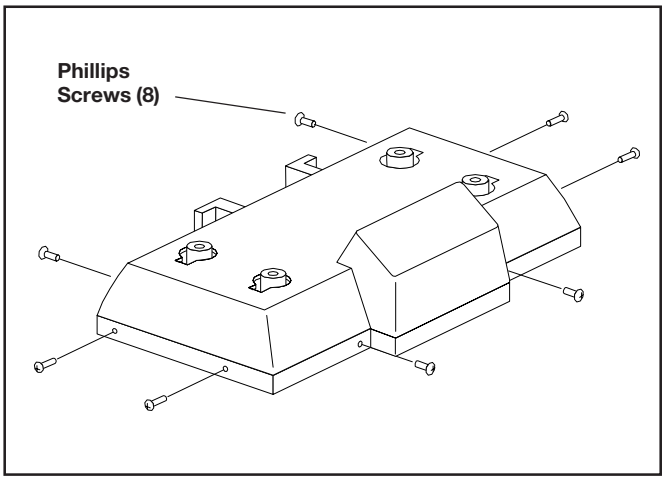


Fig. 3I

7. Ensure that the ribbon cable is still connected to the display. Carefully lift off the upper case and rotate it 180º, pivoting around the ribbon cable in the front. Set the rotated case down in front of the scale (*Fig. 3J*). (Display panel now faces rear.)

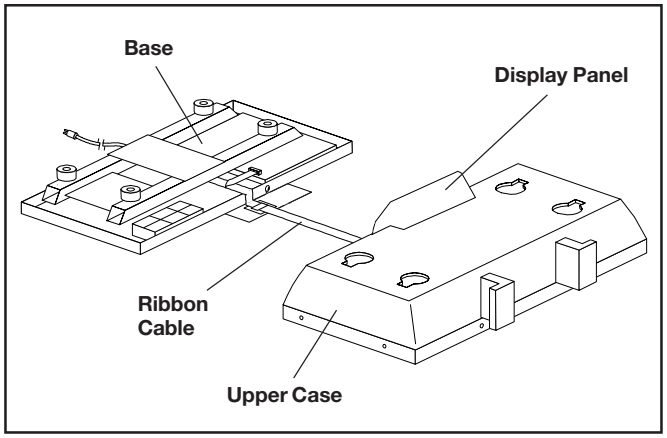


Fig. 3J

8. Internal components are now exposed to allow troubleshooting measurements (see *Problems & Solutions* on page 3-9).

   CAUTION: To avoid risk of electrical shock, when unit is disassembled, use battery power for troubleshooting whenever possible.

9. Reassemble the scale in reverse order of disassembly.

   CAUTION: Smart Scale must be recalibrated after it has been disassembled and reassembled (see *Calibration* on page 3-1).

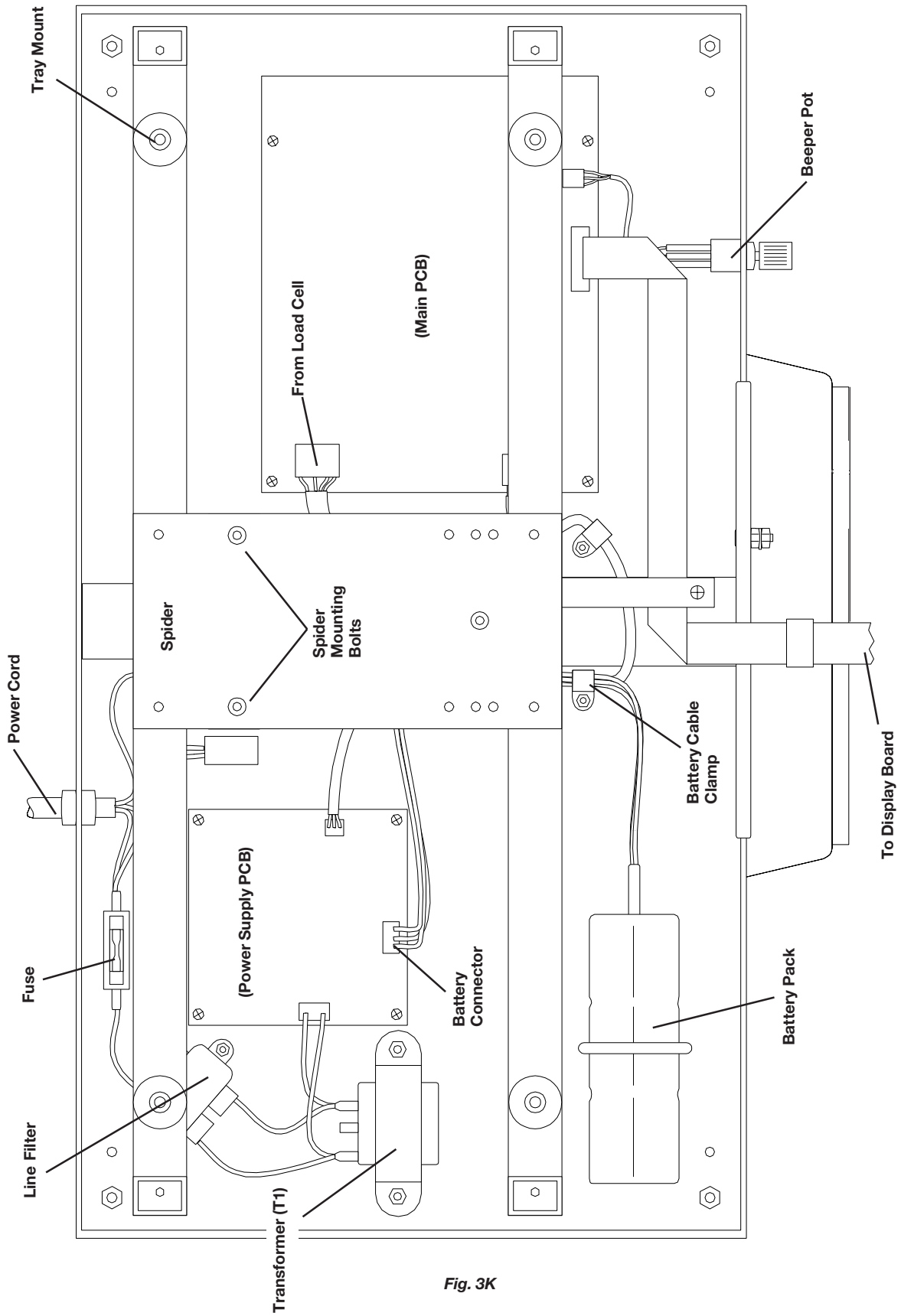

Tray Mount
Beeper Pot
From Load Cell
(Main PCB)
Spider
Spider Mounting Bolts
Power Cord
Battery Cable Clamp
To Display Board
(Power Supply PCB)
Fuse
Battery Connector
Battery Pack
Line Filter
Transformer (T1)

Fig. 3K

Problems & Solutions

Schematics, wiring diagrams, and PCB drawings are at the back of the manual.

Use the troubleshooting measurements described below to test printed circuit boards and components that are suspected of being defective (see *Troubleshooting* on page 3-17).

Before conducting troubleshooting measurements on the Smart Scale, do the following:

1. Disassemble the scale according to *Disassembly* instructions on page 3-5.

   CAUTION: To avoid risk of electrical shock, when unit is disassembled, use battery power for troubleshooting whenever possible.

2. Check all fuses and connectors.

3. Check the supply voltages on main and power supply PCBs as shown in table below (*Fig. 3L*). If any voltages are out of tolerance, replace the defective PCB.

ID	Test Point	Location PCB	Value
Vin	J4-1	Power supply	12.00 ±0.25Vdc
CHG/AC_ON	J3-1	Power supply	5.00 ±0.25Vdc
GND	TP1	Power supply	reference
Vbat	TP2	Power supply	7.2Vdc nominal
+5Vdigital	TP1	Main	5.00 ±0.1Vdc
+5Vanalog	TP2	Main	5.00 ±0.1Vdc
-5Vanalog	TP3	Main	-5.00 ±0.5Vdc

Fig. 3L

NOTE: The scale will not zero unless the tray is in place. Make sure tray is in place when troubleshooting.

▸ "Standby" light blinks but scale will not show zero.

The signal is beyond the zero capture range or unstable:

1. With tray on scale, place the scale in the counts mode (see page 3-11). The displayed counts must be 500–5000. If out of range:

   a. Test the loadcell (see page 3-11). Return scale to Olympic Medical if damaged.

   b. Replace the main PCB.

2. If the displayed counts fluctuate more than ±4 counts:

   a. Make sure scale is on a stable, non-vibrating surface.

   b. Test the loadcell (see page 3-11). Return scale to Olympic Medical if damaged.

   c. Replace the main PCB.

▸ Scale does not turn on and "Standby" does not blink.

On main PCB, U1-1 should go logic low when **On/Off** is pressed.

1. If it does not go low:
   a. Test the membrane switch panel. Replace if defective.
   b. Test display PCB ribbon cable. Replace if defective.
2. If it does go low:
   a. Replace the main PCB.

▸ "Charging" light is on but scale will not operate on batteries.

1. Connect scale to AC line for 2 hours to charge batteries. If scale still will not operate, proceed to step 2.
2. When batteries are fully charged (LED D5 flashing 1/8 sec. rate) battery voltage should be approximately 8.4 Vac:
   a. If not, replace battery pack.
   b. If so, replace power supply board.

▸ "Reweigh", "Gm/Lb" or "Zero" switches do not work.

1. Make sure the membrane switch panel is properly connected.

   NOTE: If S1 jumper is installed on main PCB (see page 3-24), the "Gm/Lb" switch will be disabled and the scale will display grams only.

2. With power off, check resistance of switch at pin on J2 of display PCB (*Fig. 3M*). Resistance must be <= 5 ohms when pressed. If not, replace membrane switch panel.

Switch	J2 pin on display PCB
Common	4, 5, 6
Zero	1
Reweigh	2
Gm/Lb	3
On/Off	7

Fig. 3M

3. Check that pressing inoperative switch pulls its signal line to ground on the main PCB.
   a. If not, test display PCB ribbon cable. Replace if defective.
   b. If so, replace the main PCB.

▸ Testing the Loadcell

1. With empty tray on the scale, enter the counts mode (see below). If the displayed counts are outside of 500–5000, proceed to step 2.
2. Place 7.5-kg weight on the tray and enter the counts mode. Adjust the VR4 (see "Adjusting the Zero Offset" on page 3-13) until displayed counts are 32768 ±10 counts. Recalibrate scale and test accuracy with two known weights other than 7.5 kg (preferably with one < 7.5 kg and one > 7.5 kg).
3. If step 2 is not possible, return scale to Olympic Medical for loadcell replacement.

▸ Testing the Display

Press **Gm/Lb** while turning the scale on. All lights will illuminate except "Charging," which will only illuminate when line power is present.

▸ Weight Lock Inhibit Mode

Press **Gm/Lb** twice to enter the Weight Lock Inhibit Mode. In this mode, weights cannot lock.

NOTE: Press off to exit test mode at any time.

▸ Counts Mode

Press **Reweigh** while turning scale on to view Raw AD counts.

Replacing the Battery Pack

WARNING: Electrical shock hazard when enclosure is removed. Disconnect power cord from electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

1. Turn scale off and disconnect power cord from electrical outlet.
2. Remove the scale enclosure (see *Disassembly* on page 3-5).
3. Clip the cable tie holding the battery pack and remove the battery cable clamp (*Fig. 3K*).

   NOTE: Ensure that the battery lead to the main PCB is routed through the cable clamp when reassembling.

4. Unplug battery connector from main PCB (*Fig. 3K*) and lift battery pack from Velcro® hold-down. The battery pack is rated at 7.2 Vac, 1700 mAh, rapid charge.

   NOTE: Replace battery pack only with Olympic battery pack, Catalog No. 400850-01.

   WARNING: Use of incorrect battery pack could lead to equipment damage, explosion, or fire.

WARNING: Use of incorrect battery pack could lead to equipment damage, explosion, or fire.

5. After replacing the battery pack, reassemble the scale by reversing the steps described in *Disassembly* on page 3-5.

NOTE: Charge new batteries for two hours before operating scale on battery power. To charge, simply connect power cord to electrical outlet. The red “Charging” light illuminates while unit is connected to electrical outlet.

Replacing the Fuse

WARNING: Electrical shock hazard when enclosure is removed. Disconnect power cord from electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

1. Turn scale off and disconnect power cord from electrical outlet.
2. Remove the scale enclosure (see *Disassembly* on page 3-5).
3. Remove fuse from fuse holder (*Fig. 3K*) and replace with 3/8 amp, 250 Vac Slo-Blo fuse (see page 3-16).
4. Reassemble the scale by reversing the steps described in *Disassembly* on page 3-5.

Replacing the Pico Fuses

The pico fuses are labeled F1 and F2. To remove, simply pull the pico fuse straight up, off of the power supply board. Once removed from the power supply board, the pico fuses can be checked for continuity. To replace, plug the new pico fuse into its socket on the power supply board. The pico fuses are not polarity sensitive. For replacement part information, see page 3-16.

Removing Internal Components

Remove scale enclosure (see *Disassembly* on page 3-5). The H-shaped tray supporting structure above the loadcell, called the "spider," must be removed before the PCBs can be replaced. Remove the spider from the loadcell by unscrewing the two mounting screws (*Fig. 3N*).

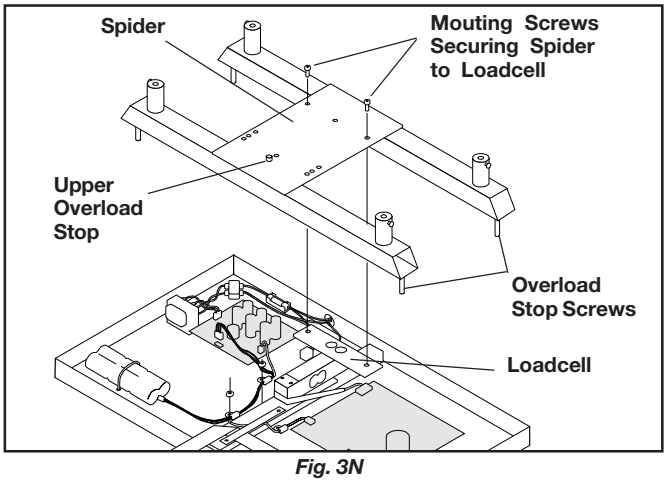


Fig. 3N

Remove the display PCB by disconnecting the ribbon cable from the display board and then unscrewing the four mounting screws (*Fig. 3O*).

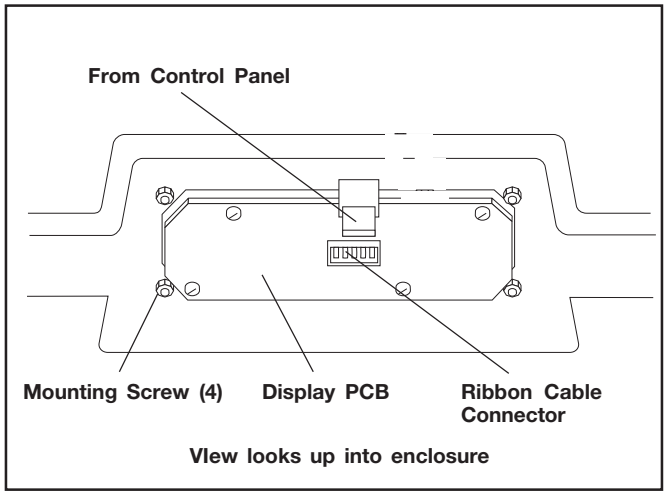


Fig. 3O

Remove the main and power supply boards by disconnecting all connectors and then unscrewing the mounting screws (*Fig. 3K*). After replacing main or power supply boards, check and adjust the zero offset according to *Adjusting the Zero Offset* below.

Adjusting the Zero Offset

NOTE: The Zero Offset must be adjusted after replacing the main PCB.

1. Place the scale on blocks high enough to allow access to the potentiometer ports on the underside of the scale. Ensure that the tray is in place.
2. Access counts mode by pressing **Reweigh** while turning on the scale (**On/Off**).
3. Place the tray on scale and place a 7.5-kg weight (available from Olympic Medical, Catalog No. 56315) on the tray.

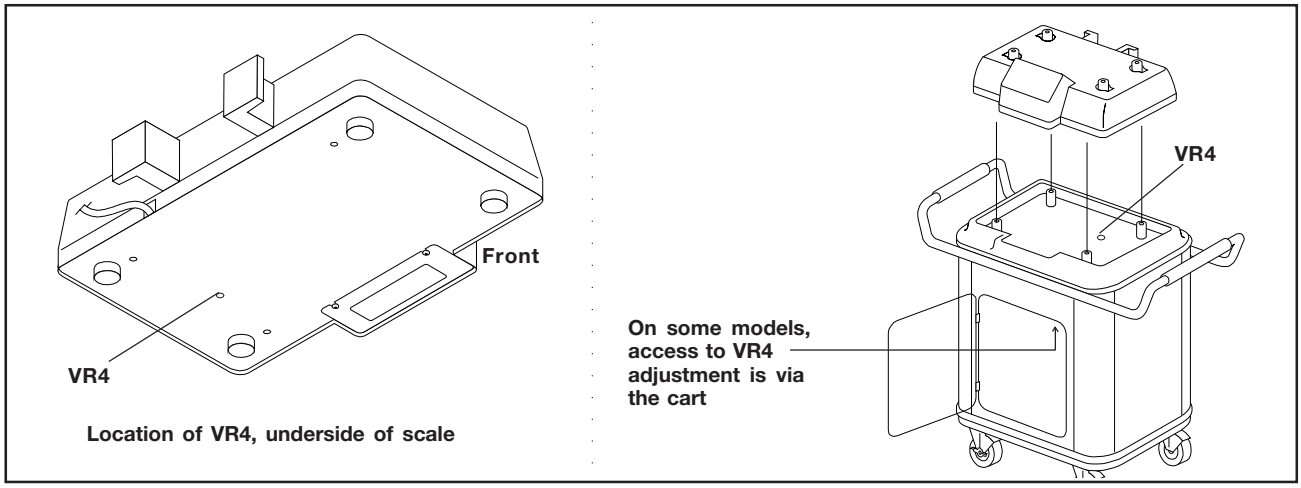


Fig. 3P

4. Locate the potentiometer port for VR4 (see the label on the underside of the scale).

   NOTE: For cart-mounted scales, the VR4 may be accessible via the cart. The labeled VR4 port is located under the top shelf, to the right. Earlier scales require removal from the cart to access the VR4.

5. Adjust the VR4 until displayed counts are 32768 ±10 counts.

6. Recalibrate scale (see *Calibration Procedure* on page 3-2), and test accuracy with two known weights other than 7.5 kg (preferably one < 7.5 kg and one > 7.5 kg).

   NOTE: If displayed counts cannot be brought into range by adjusting the VR4, return the scale to Olympic Medical for service.

   NOTE: Recalibrate the scale before use.

Replacing the Tray Mounts

If a tray mount becomes stripped and will no longer tighten on the tray leg, replace the mount as follows:

1. Turn scale off and disconnect power cord from electrical outlet.

2. Remove the scale enclosure (see *Disassembly* on page 3-5).

3. The tray mounts are attached to the spider. Remove the two mounting screws securing the spider assembly to the top of the loadcell and remove the spider from the loadcell (*Fig. 3N*).

4. Place the spider upside down on the bench (*Fig. 3Q*). The locknuts holding the tray mounts are accessible through the four access holes in the bottom of the support arms (*Fig. 3Q*).

5. Remove the locknuts and the old tray mounts.

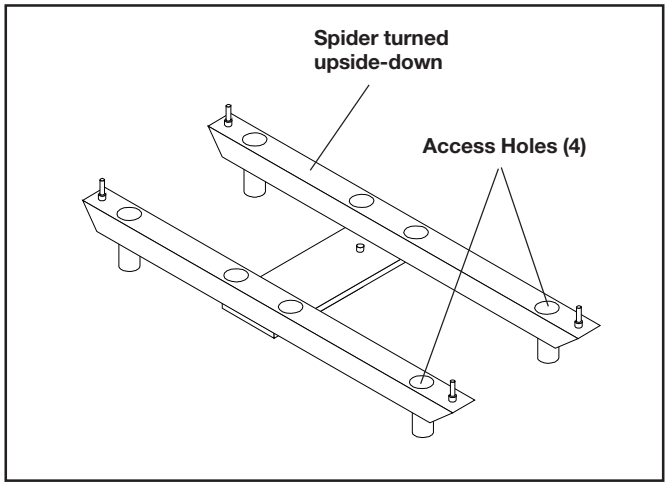


Fig. 3Q

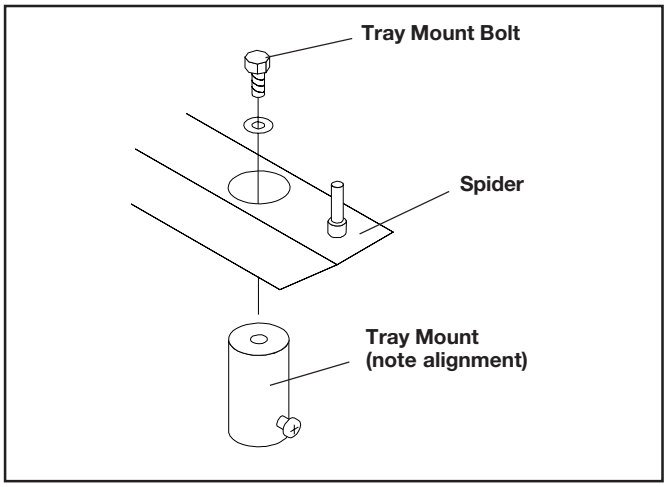


Fig. 3R

6. Install the new tray mounts by tightening the tray mount bolts, ensuring that the Phillips-head screw on each mount is aligned correctly (*Fig. 3R*).

   NOTE: Before proceeding to the next step, ensure that the new tray installs and removes easily from the mounts. Adjust the mounts by loosening or tightening the bolts as necessary.

7. With the new tray mounts snugly fastened, install the spider on the scale base.

   NOTE: Before tightening the spider, ensure it is parallel to the edges of the base and that both sides of the spider are equidistant (± 1/16th") from the sides of the base.

8. Reassemble the scale by reversing the *Disassembly* steps on page 3-5.

   NOTE: Ensure that there is adequate clearance between the scale enclosure and each tray mount.

Full One-Year Warranty

All parts and labor furnished without cost for one year.

Repair and Replacement of Printed Circuit Boards and Components

To order any replacement parts for the Smart Scale, call Olympic Medical toll-free at 1-800-426-0353 (outside U.S. or Canada 01-206-767-3500). Overnight parts and loaner scales are available when required. The faulty component must be returned to:

Olympic Medical
5900 First Avenue South
Seattle, WA 98108

Repair Parts

Spider Support Arm Assembly 400290

Tray Mount Assembly 302099

Volume Control Knob 100124

Newborn Tray 56307

Main PCB Assembly 401193

Power Supply PCB Assembly 400864

Display PCB Assembly 400865

Front Panel Assembly 400335

120 Vac Transformer/Filter Assembly:

- Transformer 200254
- Line Filter 200129

Ribbon Cable, Power Supply to Main Board 400885

Ribbon Cable, Display to Main Board 200152

120 Vac Fuse Line (AC), 1/4 amp 200021-581

F1 Fuse 200021-617

F2 Fuse 200021-619

Battery Pack 400850

Model 25 Caster (front) 100066

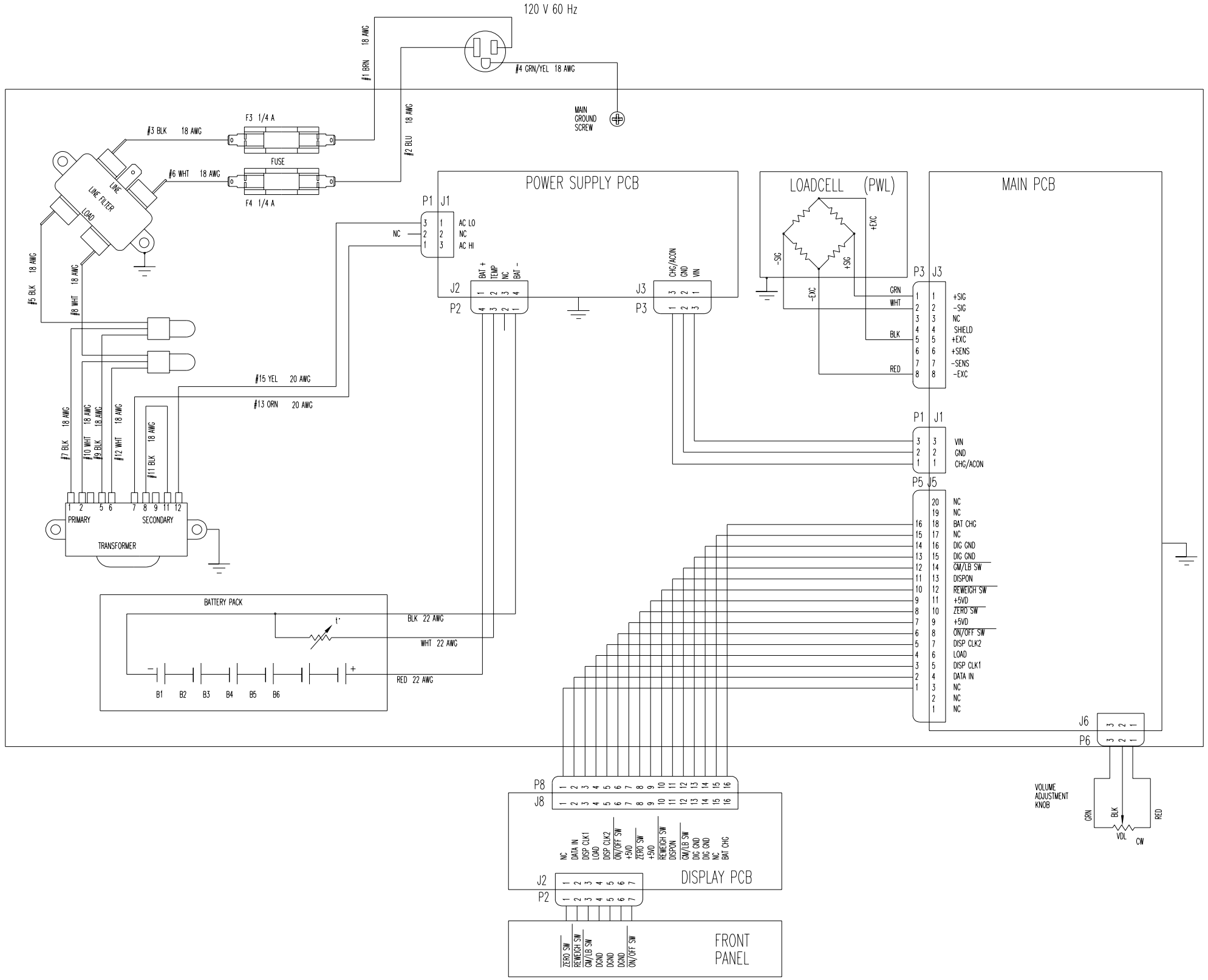
Model 25 Caster (rear) 100066

Troubleshooting

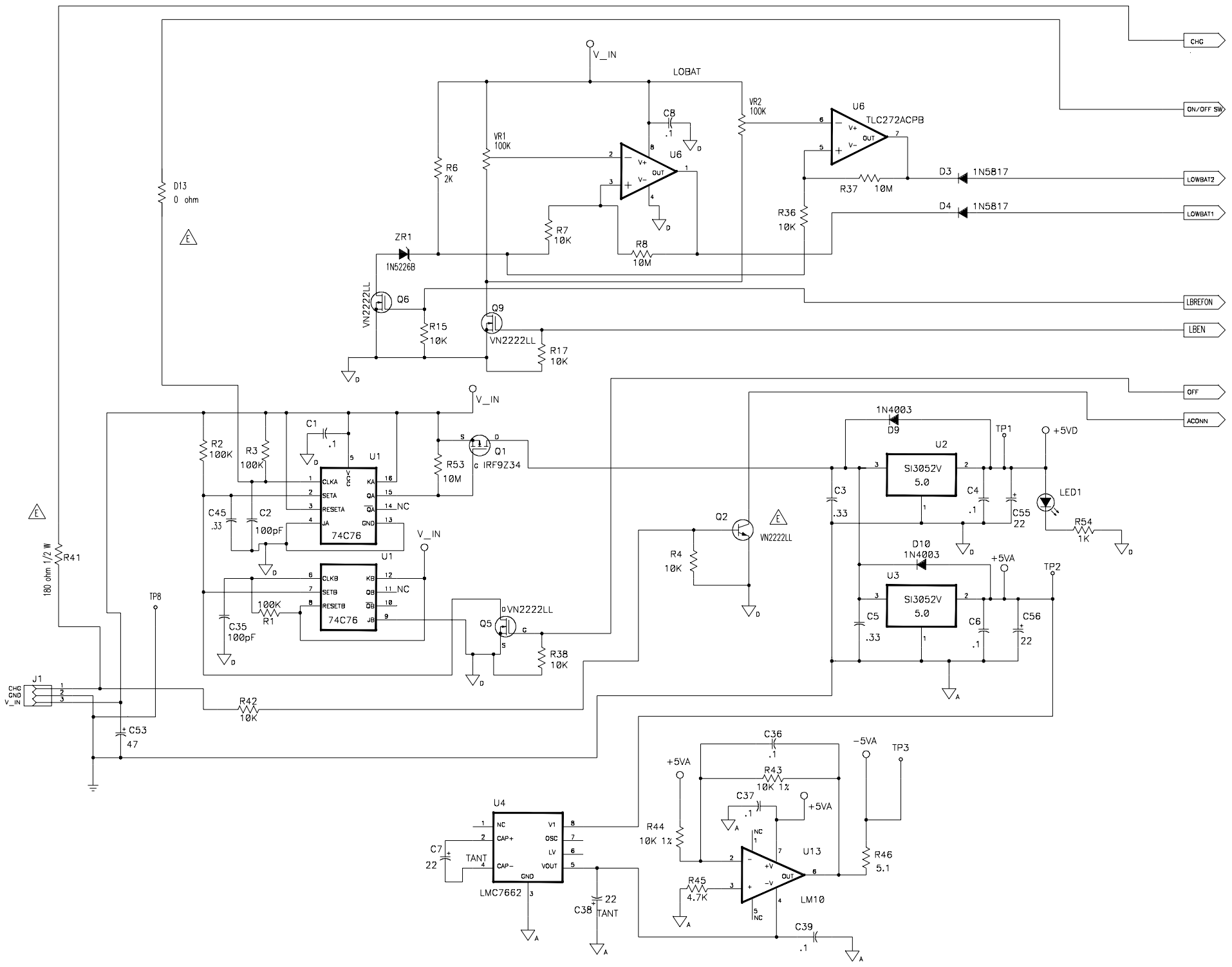
The following is a chart of minor problems and their probable solutions. For problems beyond the scope of this chart, call Olympic Medical toll free at 1-800-426-0353 in U.S. or Canada.

Problem	Probable Cause	Solution
"Standby" light blinks but scale will not show "0"	Device is out of calibration	Calibrate the scale (see *Calibration* on page 3-1).
	Malfunctioning loadcell	Test the loadcell (see *Problems and Solutions* on page 3-9).
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on page 3-9).
	Malfunctioning power supply PCB	Test the board (see *Problems and Solutions* on page 3-9).
Scale will not power on and "Standby" light does not blink	Battery depleted; device not connected to electrical outlet	Connect the device to an appropriate electrical outlet, then allow the battery to charge for 2.5 hours.
	Blown fuse	Replace the fuse (see *Replacing the Fuse* on page 3-12).
	Malfunctioning membrane switch panel	Test the switch panel (see *Problems and Solutions* on page 3-9).
	Malfunctioning power supply PCB	Test the board (see *Problems and Solutions* on page 3-9).
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on page 3-9).
	Malfunctioning display PCB	Test the display PCB (see *Problems and Solutions* on page 3-9).
	Defective display panel cable	Test the display cable.
Scale will not reweigh when "Reweigh" is pressed	Malfunctioning membrane switch panel	Test the switch panel (see *Problems and Solutions* on page 3-9).
	Defective display panel cable	Test the display cable.
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on on page 3-9).
Scale will not change units when "gm/lb" is pressed	S1 jumper on main PCB installed	Remove the jumper from S1 on the main PCB.
	Malfunctioning membrane switch panel	Test the switch panel (see *Problems and Solutions* on page 3-9).
	Defective display panel cable	Test the display cable.
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on page 3-9).
Scale will not zero when "Zero" is pressed	Malfunctioning membrane switch panel	Test the switch panel (see *Problems and Solutions* on page 3-9).
	Defective display panel cable	Test the display cable.
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on page 3-9).
Scale will not lock weight on display; green "Read" light does not illuminate	Scale in weight lock inhibit test mode (see page 3-11)	Turn the scale off to exit test mode.
	Malfunctioning main PCB	Test the board (see *Problems and Solutions* on page 3-9).

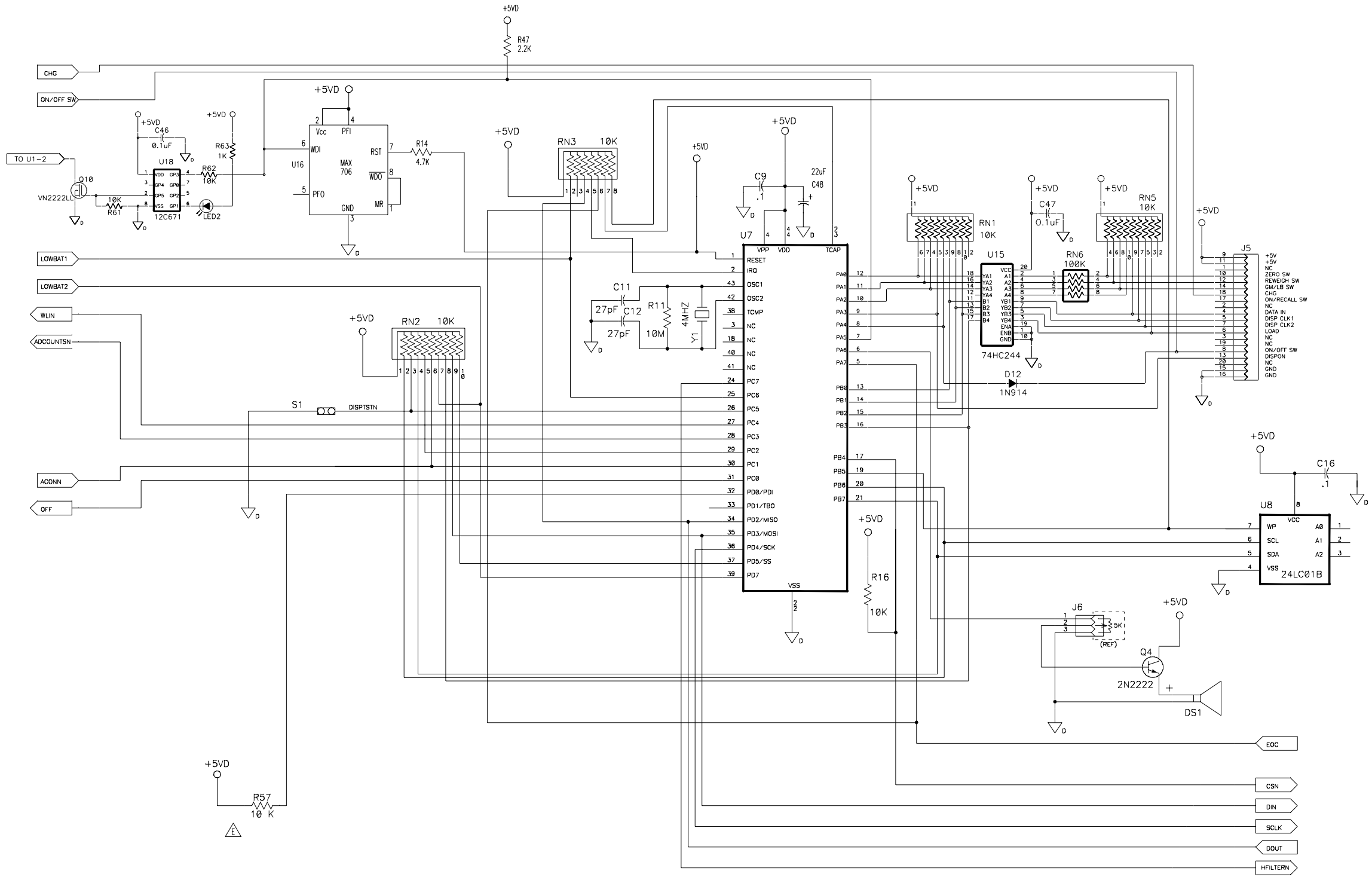
(Continued on next page)



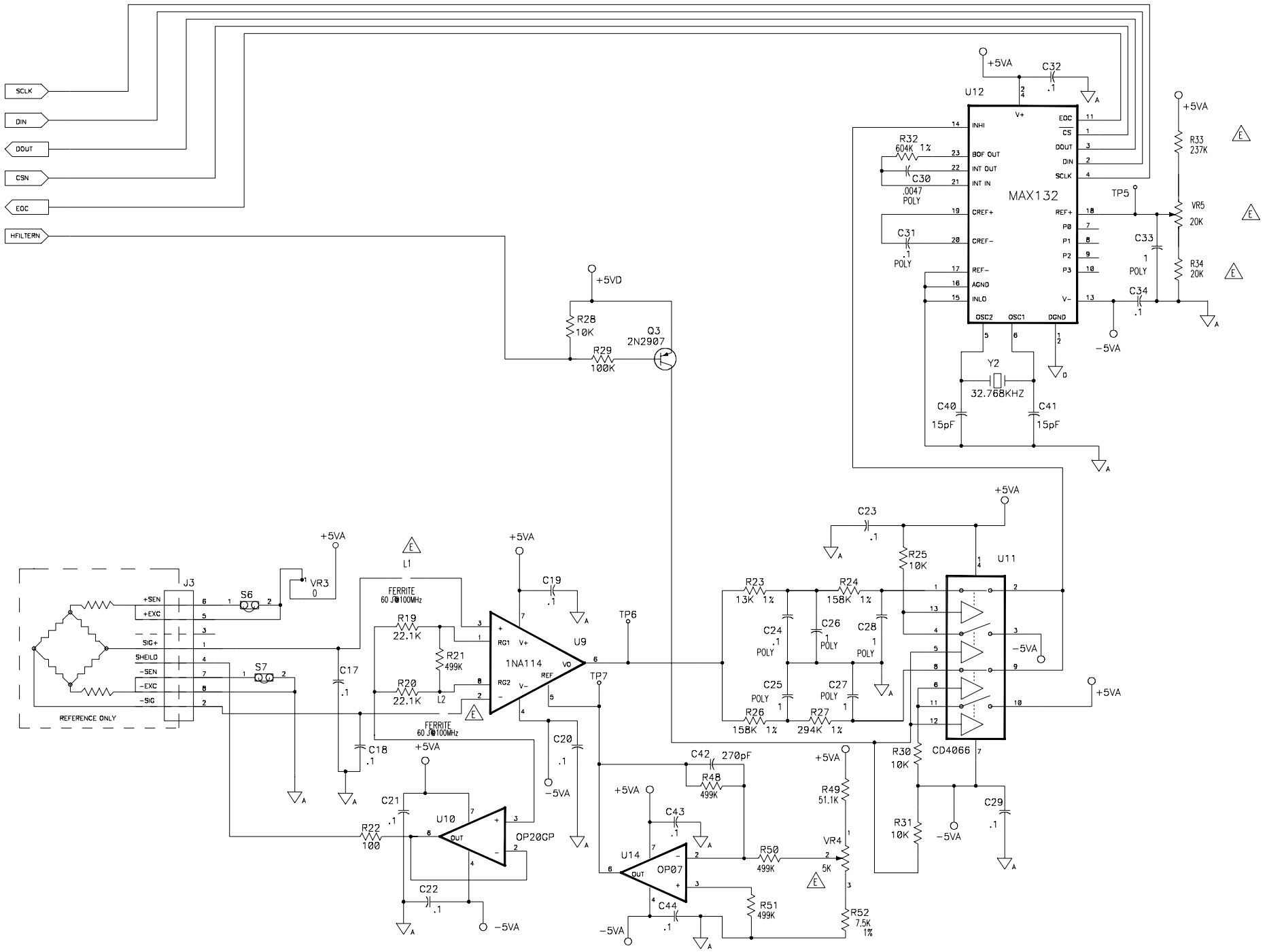
OVERALL WIRING DIAGRAM
DRAWING NO. 700157, Rev. A



SCHEMATIC MAIN BOARD
DRAWING NO. 700142, Rev. E
SHEET 1 OF 3



SCHEMATIC MAIN BOARD
DRAWING NO. 700142, Rev. E
SHEET 2 OF 3



SCHEMATIC MAIN BOARD
DRAWING NO. 700142, Rev. E
SHEET 3 of 3

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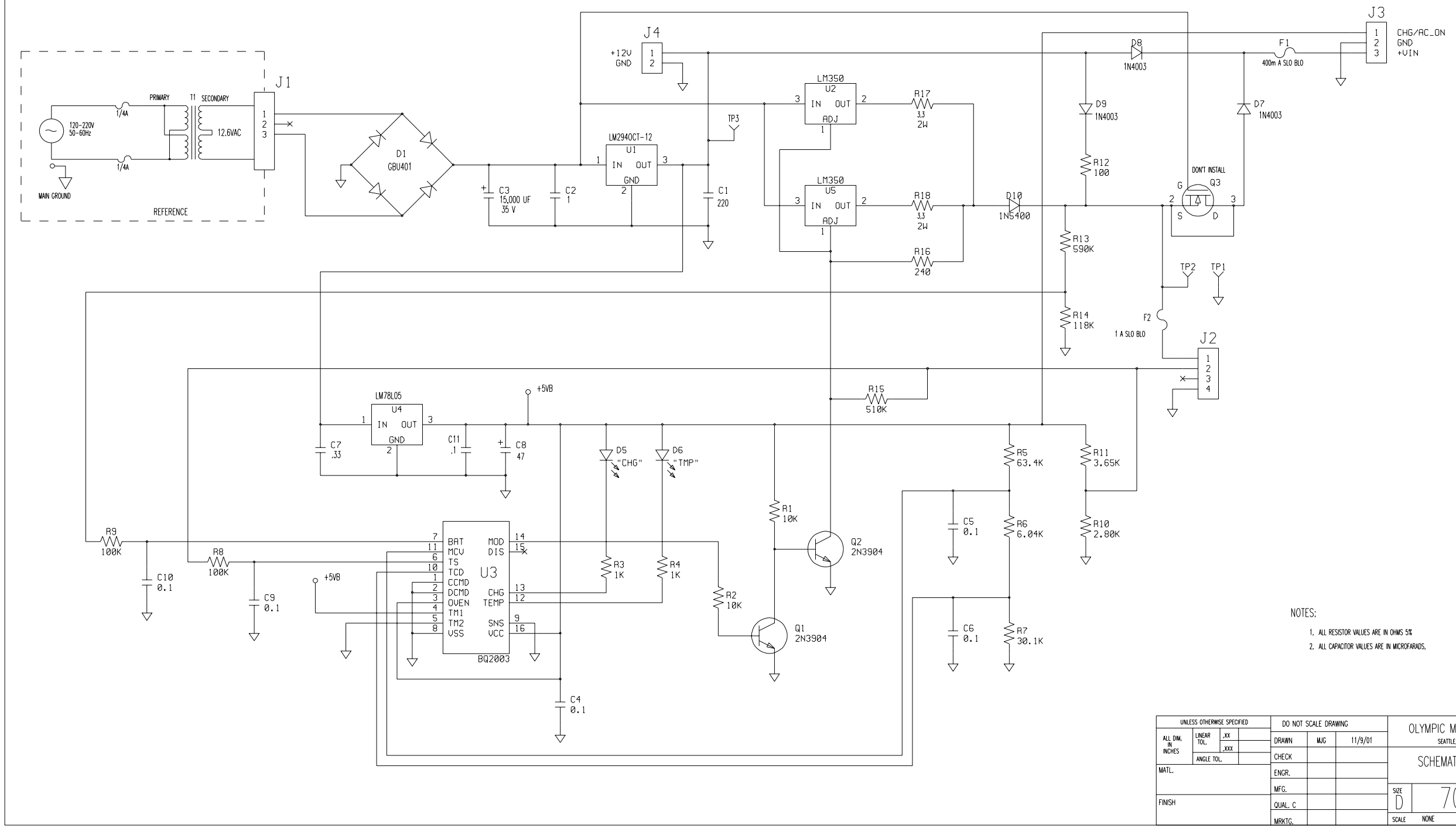
LTR	DESCRIPTION	ECN	DATE	APPROVAL	
-	PRODUCTION RELEASE				



NOTES:

1. ALL RESISTOR VALUES ARE IN OHMS 5%
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.

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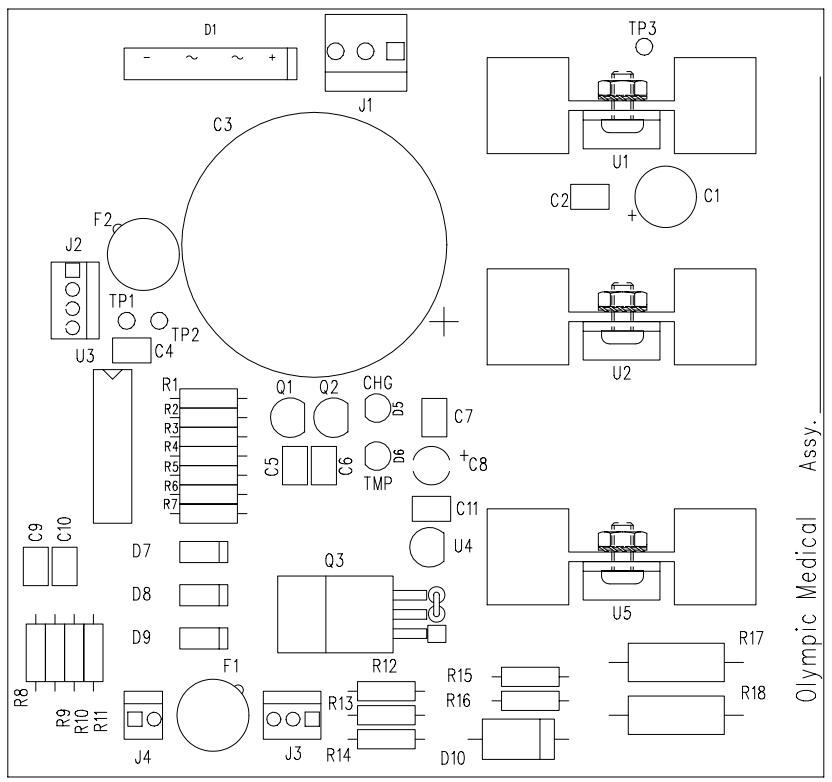
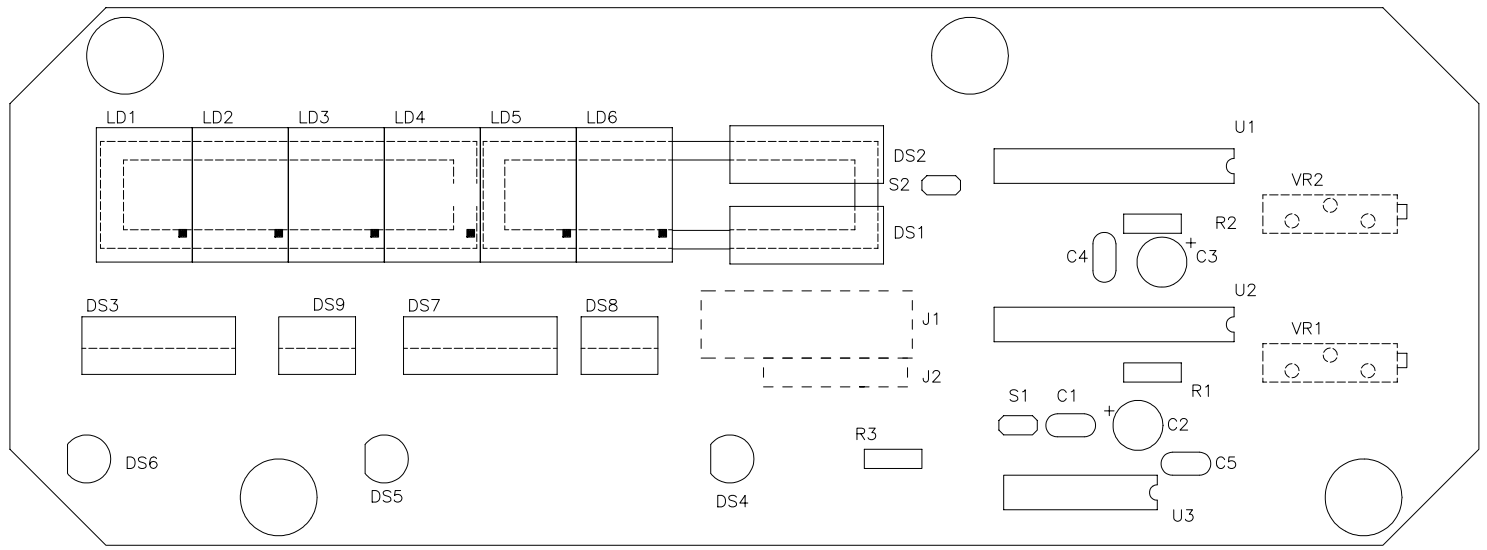
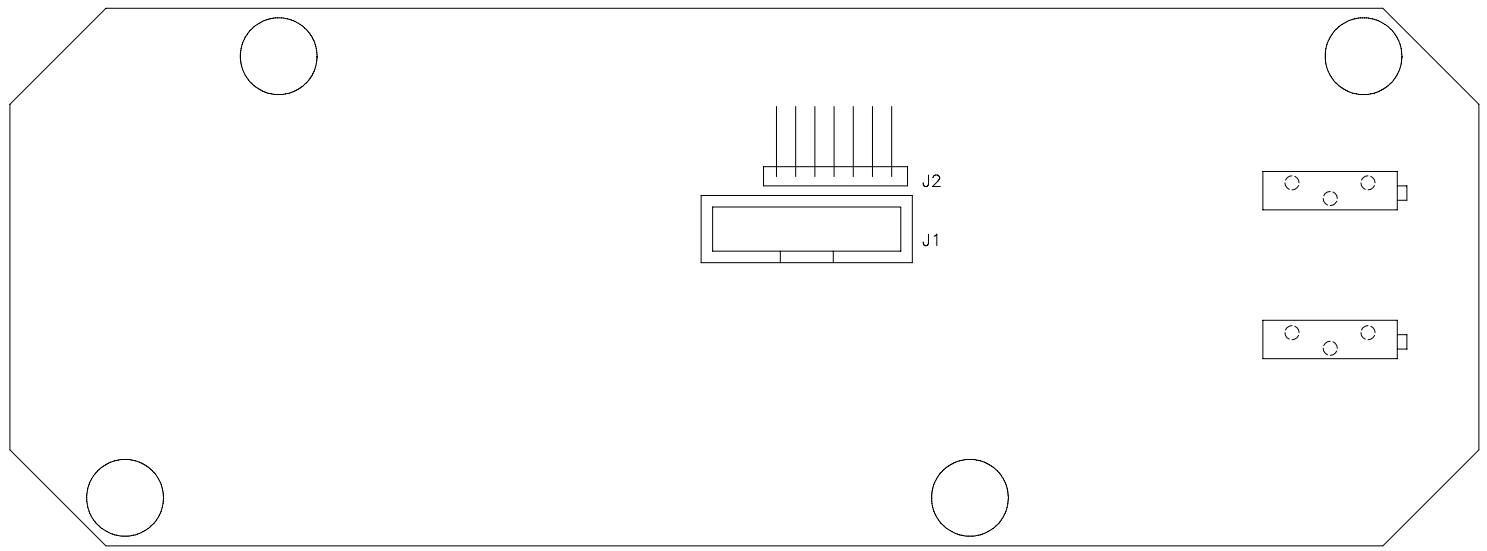
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	11/9/01	
		.XXX	CHECK			SCHEMATIC, POWER SUPPLY
	ANGLE TOL.		ENGR.			
MATL.			MFG.			SIZE D 700213
FINISH			QUAL. C			
			MRKTG.			SCALE NONE

SCHEMATIC POWER SUPPLY BOARD
DRAWING NO. 700213, REV. –

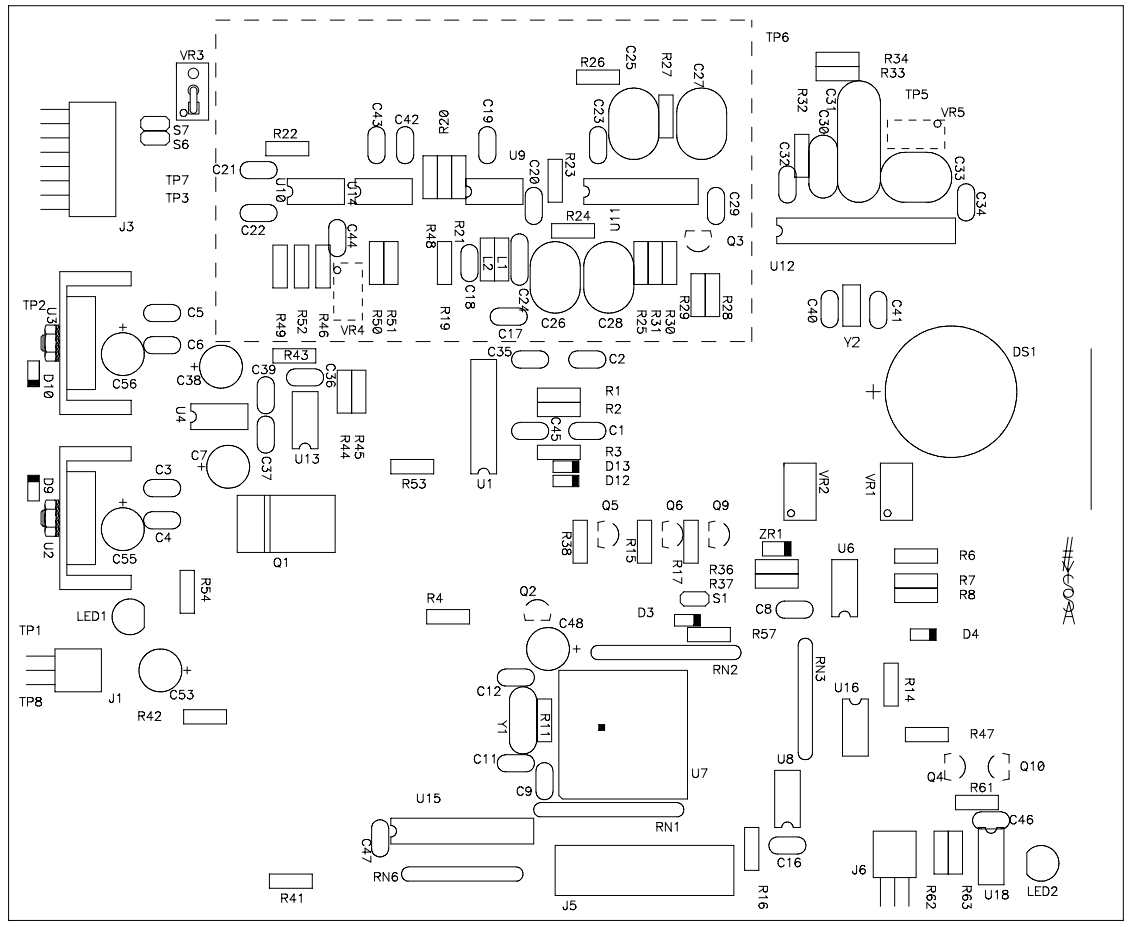


POWER SUPPLY PCB
DRAWING NO. 400864, Rev. C

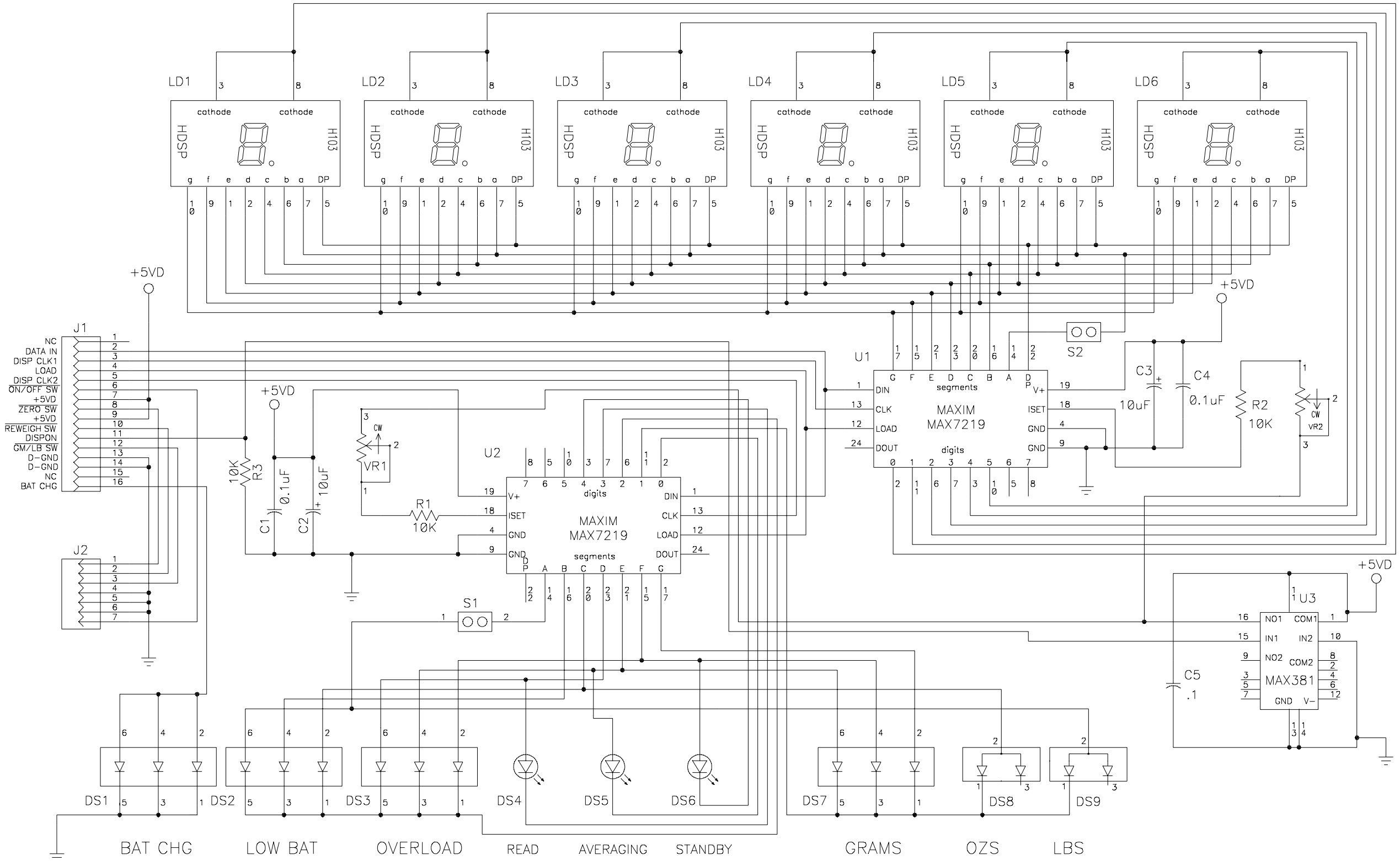




DISPLAY PCB
DRAWING NO. 400865, Rev. C



MAIN PCB DRAWING
DRAWING NO. 401193, Rev. –



SCHEMATIC DISPLAY BOARD
DRAWING NO. 700143, Rev. A